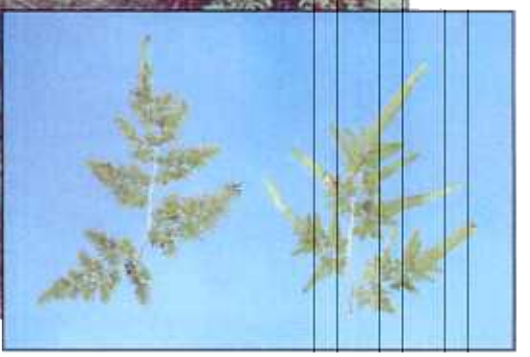
Weeds in the Woods

By Andrea Van Loan

Pine plantation infested with Japanese climbing fern in Calhoun County (site of abandoned pine straw lease). Andrea Van Loan, FDACS.



Above: Fertile (left) and infertile (right) leaflets of Japanese climbing fern. Jeffrey W. Lotz, FDACS.

Japanese climbing fern (*Lygodium japonicum*) is a nonnative vine currently threatening public and private forestlands in the southeastern United States. Dense growth of Japanese climbing fern can reduce biodiversity on infested sites, hindering some forest management practices. Native to eastern Asia, Japanese climbing fern has twining, climbing fronds (stems) which may grow to 100 feet in length. The leaflets growing from the main stem are from four to eight inches in length. The plant produces both fertile (spore-producing), and infertile leaflets (see photo 1). Some variability occurs in leaflet shape depending on the age and fertility of leaflets. Japanese climbing fern grows on sites ranging from shady to sunny and is generally found in moist areas, but it will also grow in dry sites.

Introduced as an ornamental plant in the southeastern United States in

1900, Japanese climbing fern now invades uplands forests, pine plantations, floodplains, wetlands, and disturbed areas throughout the southeastern United States from Florida to North Carolina, and west to Texas. In Florida, infestations of Japanese climbing fern occur throughout the panhandle (where the problem is most severe), and across the peninsula, south to Hardee and Highlands counties. A related plant in south Florida, Old World climbing fern (*Lygodium microphyllum*), currently threatens the Everglades ecosystem.

Japanese climbing fern reproduces by spores (borne on the underside of fertile leaflets), or by rhizome growth. Spores are dispersed by wind and water and carried on equipment and clothing. At present, little more is known about spore biology and survival. The fern grows along the ground, up the stems of trees, and over groundcover and midstory plants and shrubs (see photos 2 and 3). The leaves freeze back in the winter, or following a frost, but dead stems serve as a ladder for new growth, allowing it to readily move back into the midstory or canopy.

Of recent and increasing significance is the impact of Japanese climbing fern on the pine straw industry in Florida. The presence of and difficulty in controlling this plant has forced some pine straw producers out of production due to the dense, impenetrable nature of the vine's growth (See photos 4a and 4b). Additionally, Japanese climbing fern has been detected in some pine straw bales in north Florida, raising concerns about the unintentional spread of the plant through the sale of contaminated bales. Listed as a prohibited plant due to its threat to agriculture, beneficial organisms, and the public by the Florida Department of Agriculture and Consumer Services under Rule 5B-57, Japanese climbing fern is restricted as to introduction, possession, movement, and release in Florida. Concerns also exist about the impact of other silvicultural activities, such as the use and movement of logging equipment, on the spread of this invasive plant.

Research on control technologies for Japanese climbing fern is still underway. Field herbicide tests completed by the Department of Environmental Protection found that the best long-term results to date have occurred with fall application of Rodeo® or Roundup® (glyphosate) at 1.5 percent concentration (equivalent to 7.5 pints per acre) to the foliage of the fern with a nonionic surfactant at 0.05 percent concentration. Herbicide should be applied to achieve complete coverage of all foliage. Multiple treatments are necessary for successful control due to regrowth. *(Specific mention of trade names does not constitute a guarantee or warranty of the product and does not imply its approval to the exclusion*

Above: Japanese climbing fern growing along the ground in pine plantation in Hamilton County (site of abandoned pine straw lease). Jeffrey W. Lotz, FDACS.

Right: Typical vertical growth pattern of Japanese climbing fern on tree stem. Andrea Van Loan, FDACS.

of other products that may also be suitable. Any product or trade names listed are for the benefit of the reader. Always read carefully and follow all herbicide label directions. It is unlawful to use a pesticide in a manner that is inconsistent with the label.)

The Florida Department of Agriculture and Consumer Services, the Department of Environmental Protection, and the University of Florida are currently working with representatives of the pine straw industry to identify and develop Best Management Practices for the control and management of Japanese climbing fern in pine plantations. Additionally, the Florida Division of Forestry's Forest Health section is developing an assessment of the extent of Japanese climbing fern distribution on private forestlands in Florida. For more information, please contact Andrea Van Loan via email at vanloaa@doacs.state.fl.us or via phone at 352-372-3505, ext. 429. ■

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